REMARKS

Claims 1-18 are pending in the current application. In an office action dated July 28, 2008 ("Office Action"), the Examiner objected to claim 7, and rejected claims 1-18 under 35 U.S.C. §112. Following a discussion with the Examiner, by telephone, on November 21, 2008, Applicants' representative has cancelled originally filed claims 1-18, in the above amendment, and provided new claims 19-32 to more clearly claim and particularly point out that which Applicants regard as their invention. Applicants' representative requests that claims 1-18 be cancelled without prejudice, so that, should the new claims be found unsatisfactory by the Examiner, the originally filed claims can be again pursued.

Please consider newly added claim 19:

19.   An apparatus for denoising an input noisy signal, the apparatus comprising:
one or more memories; and
a controller that
receives the noisy signal z that includes a number of sequentially ordered symbols, each symbol having a position,
stores the noisy signal z in the one or more memories,
receives a signal r, output from a preliminary denoising system that operates on the received noisy signal z, that includes a number of sequentially ordered symbols, each symbol having a position,
stores the signal r in the one or more memories, and
produces an output signal z' by replacing a symbol within each of a number of different subsequences that occur in the noisy signal z with a corresponding replacement symbol that the controller computes to provide a minimal estimated signal degradation.

This claim is directed, for example, to the apparatus represented by the box labeled "100" in Figure 1 of the current application, as well as to various other embodiments of the present invention. The element "one or more memories" refers to memories 112-114 in Figure 1, as well as to one or more memories that may be included in alternative embodiments of the present invention. The second element is directed to controller 111 in the embodiment shown in Figure 1, and to similar controllers in alternative

embodiments. The controller receives a noisy signal z (23 in Figure 1) that is produced by passing an original, clean signal (21 in Figure 1) through a noise-introducing channel (20 in Figure 1). The controller also receives a signal r (24 in Figure 1) that is output by a preliminary denoising system (120 in Figure 1) that attempts to denoise the noisy signal z (23 in Figure 1) to produce the partially denoised output signal r (24 in Figure 1). The noisy signal z and signal r are stored by the controller into memory 112. The controller (111 in Figure 1) then processes these two received signals z and r to produce an output signal z' (22 in Figure 1) by replacing a symbol within each of a number of different subsequences that occur in the noisy signal z with a corresponding replacement symbol that the controller computes to provide a minimal estimated signal degradation.

Production of the output signal z' is described, in the current application, beginning on line 1 of page 4 and extending to line 2 of page 10. As claimed in claim 20, and as discussed on pages 4 and 5 of the current application, the controller considers each symbol subsequence $z(q)$ within the noisy signal z. Each subsequence $z(q)$ occurs at one or more positions p, including position q. The controller counts the number of occurrences of each particular symbol within each subsequence within the signal r, or, in other words, the number if times each symbol is found at one of positions r_p in signal r. For example, a subsequence may be a number of contiguous signals immediately to the left of, and adjacent to, and immediately to the right of, and adjacent to, a central symbol, also within the subsequence. As a specific example, a subsequence may comprise an embedded symbol, three symbols to the right of the embedded symbol, and three symbols to the left of the embedded symbol. The controller finds all occurrences of that particular subsequence within the noisy signal, and then counts the numbers of occurrences of different symbols at the positions in the signal r of the embedded symbols in the occurrences of the subsequence in the noisy signal z. Then, using this information and a degradation function, the controller computes a replacement symbol for replacing the symbols embedded in all occurrences of the subsequence within the noisy string, the replacement symbol selected as that symbol for which the computed degradation is minimized. In claim 20, the notation $z(q)$ refers to a particular subsequence, and the notation $z(p)$ refers to all identical subsequences within the noisy signal z that are equal to
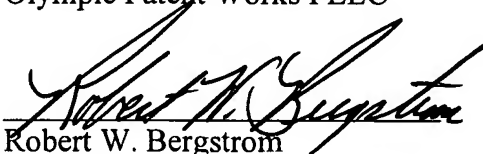
the subsequence $z(q)$. For example, in the short symbol string z, "abcdbbaadabcdbba," the subsequence "abcdbba" occurs twice, with the central symbol "d" being the embedded symbol and occurring at positions 4 and 13. In the corresponding signal r, "abccbbaadabcabba," the corresponding embedded symbols are "c" and "a" at positions 4 and 13. Thus, $z(q)$ for the symbol string z is "abcdbba," with two occurrences of this subsequence at positions 4 and 13.

In Applicants' representative's respectfully offered opinion, the remaining language in the newly added claims follows the language of the disclosure and uses similar or identical notation conventions, so that the newly added claims more clearly and distinctly claim the subject matter regarded by Applicants as their invention.

Applicants' representative wishes to thank the Examiner for discussing the current application by telephone, and hopes that the newly added claims address the Examiner's concerns. Should that not be the case, Applicants' representative would be more than happy to again discuss the claims with the Examiner by telephone and would be more than happy to rewrite the claims or make other changes requested by the Examiner in order that the claims are understandable and fully supported by the specification.

In Applicants' representative's opinion, all of the claims remaining in the current application are clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

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